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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,228	02/21/2002	Shuji Hinuma	46342/57113	1875

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EXAMINER	
ULM, JOHN D	

ART UNIT	PAPER NUMBER
1649	

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,228	HINUMA ET AL.	
	Examiner	Art Unit	
	John D. Ulm	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1) Claims 1, 3 and 12 are pending in the instant application. Claims 1 and 3 have been amended, claims 4 to 11 have been canceled and claim 12 has been added as requested by Applicant in the correspondence filed 11 January of 2006.

2) Any objection or rejection of record that is not expressly repeated in this action has been overcome by Applicant's response and withdrawn.

3) The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11 January of 2006 has been entered.

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5) Claims 1, 3 and 12 are rejected under 35 U.S.C. § 101 because they are drawn to an invention with no apparent or disclosed specific and substantial credible utility. The instant claims are drawn to a method of identifying "a compound which promotes or inhibits a function of FM-3" by comparing the effect of a test compound on a cell expressing FDM-3 with the effects of that compound on a cell lacking FM-3. Whereas the instant application in combination with the Tan et al. publication (GENOMICS 52:223-229, 01 Sept. 1998) has provided a description of an isolated DNA

encoding a putative receptor protein identified therein as "FM-3" and having "modest sequence identity to both the GHS-R and neurotensin-R", and the protein encoded thereby, it does not identify a specific biological role for this protein or its significance to a particular disease, disorder of physiological process which one would wish to manipulate for a desired clinical effect through the application of an agonist or antagonist thereto.

The text on page 35 of the instant specification expressly identifies "FM-3" as "an orphan receptor protein". Therefore, a method that serves no further purpose than the further characterization of an orphan receptor lacks a specific and substantial utility because it is employing that receptor as nothing more than the object of further research. Because the instant specification has failed to credibly identify a physiological process which has been shown to be influenced by the activation or inhibition of a putative receptor protein of the instant invention an artisan would have no way of predicting what effects the administration of that ligand to an organism would have. If one can not predict the effects that the administration of a ligand of the putative receptor of the instant invention is going to have on an organism then it is unclear as to what practical benefit is derived by the public from the identification of that ligand. In essence, the instant claims are drawn to a method that consists of nothing more than the further characterization of a protein of as yet undetermined significance.

The instant situation is directly analogous to that which was addressed in *Brenner v. Manson*, 148 U.S.P.Q. 689 (Sus. Ct, 1966), in which a novel compound which was structurally analogous to other compounds which were known to possess

anti-cancer activity was alleged to be potentially useful as an anti-tumor agent in the absence of evidence supporting this utility. The court expressed the opinion that all chemical compounds are "useful" to the chemical arts when this term is given its broadest interpretation. However, the court held that this broad interpretation was not the intended definition of "useful" as it appears in 35 U.S.C. § 101, which requires that an invention must have either an immediately obvious or fully disclosed "real world" utility. The court held that:

> "The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility", " [u]nless and until a process is refined and developed to this point-where specific benefit exists in currently available form-there is insufficient justification for permitting an applicant to engross what may prove to be a broad field", and "a patent is not a hunting license", " [i]t is not a reward for the search, but compensation for its successful conclusion."

It is noted that the claimed invention in *Brenner v. Manson* was not thev compound in question but a process of making that compound. The claimed method was held to lack practical utility because the product produced thereby lacked practical utility. The instant claims are drawn to a method of characterizing a protein of as yet undetermined function or biological significance. Until some actual and specific significance can be attributed to the protein identified in the instant specification as "FM-3", the information produced by that analytical process lacks a practical utility.

The protein employed in the method of the instant invention is a compound known to be structurally analogous to proteins which are known in the art as G protein-coupled receptors. In the absence of a knowledge of the natural ligands or biological significance of this protein, there is no immediately obvious patentable use for it or a

process that only serves to further characterize it. To employ a protein of the instant invention in the identification of substances which inhibit or induce its activity is clearly to use it as the object of further research which has been determined by the courts to be a utility which, alone, does not support patentability. It was well known in the art long before the making of the instant invention that G protein-coupled receptors can be stimulatory or inhibitory, depending upon the particular receptor and the cell in which it is expressed. To employ an assay of the instant invention in the identification of substances that inhibit or induce the activity of an "FM-3" protein without knowing the physiological consequence of that inhibition or induction is clearly to use that protein as the object of further research, which has been determined by the courts to be a utility which, alone, does not support patentability. As indicated above, an invention must have a specific and substantial utility "in currently available form", which precludes the need for further research, if that research is needed to establish a utility for the claimed invention. Since the instant specification does not disclose a credible "real world" use for the claimed assay then it is incomplete and, therefore, does not meet the requirements of 35 U.S.C. § 101 as being useful.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6) Claims 1, 3 and 12 are rejected under 35 U.S.C. § 112, first paragraph, as failing to adequately teach how to use the instant invention for those reasons given above with regard to the rejection of these claims under 35 U.S.C. § 101.

7) Claims 1, 3 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7.1) Claims 1, 3 and 12 are vague and indefinite because they recite the limitation "having an agonist activity" in the absence of a point of reference. A compound is defined as an "agonist" when it induces or stimulates a specific activity in a reference molecule, such as an enzyme or a receptor. Because the claims fail to identify the molecule being stimulated or activated by the recited compound through the use of such language as "having FM-3 agonist activity", the limitation "agonistic activity" has no clear meaning. Further, Applicant is advised that the recitation "measuring amount of specific binding" is grammatically incorrect.

7.2) Claims 1 and 12 are very confusing because it is unclear if the limitations "ligand", "ligand candidate compound" and "test compound (b)" are referring to a common element or three different elements. Why is there a "test compound (b)" and no "test compound (a)" in claim 1?

7.3) Claim 12 is vague and indefinite because there is no antecedent basis for "test compound (a)".

7.4) Claims 1, 3 and 12 are vague and indefinite because neither the claims nor the instant specification defines the reference element "R" and "X" in the limitation "R-X-NH_3". Therefore, it is not possible to distinguish between that material which is encompassed by this limitation and that which is excluded by it.

7.5) Claim 3 is vague and indefinite because it is unclear how the material encompassed by the limitation "ligand" differs from that which is encompassed by the limitation "its subtypes". Would not a "subtype" of a ligand also be encompassed by the term "ligand"? This is confusing because, if a compound "A" is a subtype of a compound "B", which is a "ligand", then "B" would be a "subtype" of compound "A", which would also be a "ligand".

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8) Claims 1, 3 and 12 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the Tan et al. publication (GENOMICS 52:223-229, 01 Sept. 1998). The text in the second full paragraph on page 228 of Tan et al. disclosed that:

> Experiments performed to identify the natural ligand for FM-3 have been unsuccessful. Transfected HEK-293 cells expressing FM-3 (cell membrane expression of FM-3 confirmed using epitope-tagged protein) failed to bind radiolabeled MK-0677 or neurotensin. In addition, several peptides including endothelin, VIP, gastrin, growth hormone-releasing hormone, somatostatin, TRH, calcitonin, and galanin did not activate FM-3 as measured by the aequorin bioluminescence assay that senses IP_3-induced Ca^{2+} mobilization as a result of phospholipase C activation (data not shown)."

Whereas it is unclear if Tan et al. employed a comparative step in the assays described therein, one of ordinary skill would have found it *prima facie* obvious to have included such a step in that assay because it was well known in the art at the time of the Tan et al. publication that most, if not all, mammalian cells express a variety of endogenous G protein-coupled receptors. It is unclear how Tan et al. would have attributed a measured change in a cellular parameter such as binding or calcium mobilization to the action of that compound upon FM-3, to the exclusion of any or all of the endogenous G protein-coupled receptors that might be expressed by a test cell, in the absence of a comparative step that employs a cell that is otherwise identical to the test cell except for the absence of FM-3.

9) Applicant's arguments with respect to claims 1 and 3 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John D. Ulm whose telephone number is (571) 272-0880. The examiner can normally be reached on 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on (571) 272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JOHN ULM
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